

*about four distinctively different women,
advancing upward in a once totally
male-dominated profession*

PATHWAYS OPENING

to Women in

ENGINEERING

Article by Michael Morgan

The U.S. military has experienced great success over the years with a wide range of equal opportunity programs for women . . . programs which have been fully institutionalized throughout the force. However, this has not always been the case in the civilian business community, and while there have been some positive advancements, certain professions have been slower than others to advance.

For example, the engineering field has traditionally been largely male-dominated, and women who entered the industry sometimes found themselves at a disadvantage in relation to levels of responsibility given to them, compared to their male counterparts. In most cases this was perhaps not intentional on the part of the firms involved, but rather was a symptom of the fact that “engineers” had been mostly male, and some companies were thus slower than others to adapt to increasing

numbers of women entering their ranks over the past several decades.

One company which has demonstrated great success with innovative organizational approaches to the recruitment, development and advancement of all women is **CH2M HILL**. The firm is the first engineering and construction industry firm ever recognized by the Catalyst organization . . . the leading nonprofit membership organization working globally with businesses and the professions to build inclusive workplaces and expand opportunities for women and business.

CH2M HILL was presented with the **2009 Catalyst Award** for its many initiatives to accelerate the advancement of women within the company, and was cited as being a model to others in that regard. Since 2003, women’s representation in senior leadership positions—as business unit heads, geographic region leaders, and top managers—has increased from 2.9 percent to 18.0 percent. More specifically, the percentage of women project managers increased from 20.3 percent in 2005 to 30.3 percent in 2008.

Who are these women? What are their respective professional and educational backgrounds? What guided them toward the careers each chose, and what mattered the most to them in relation to personal and ethical values they developed along the way?

What follows are snapshots of four distinctively different, but equally successful women within CH2M HILL, gathered during one-on-one interviews. These are but four of many other women within CH2M HILL . . . who by their example, provide testimony of what can be accomplished in a high performing and all inclusive organization.

Women in the Military



The concept of women in uniform was difficult for American society to accept. In a 1939 Army staff study which addressed the probability that women would serve in some capacity with the military, a male officer wrote that “women’s probable jobs would include those of hostess, librarians, canteen clerks, cooks and waitresses, chauffeurs, messengers, and strolling minstrels.”

Ultimately, more than 150,000 American women served in the Army during World War II, and thousands served in the Navy and elsewhere. The overall philosophy and purpose of having women in uniform was to allow them to aid the American war effort directly and individually. The prevailing philosophy at the time was that women could best support the war effort by performing noncombatant military jobs for which they were already trained. This allowed the military to make the most efficient use of available labor, and free men to perform essential combat duties.

Although women in key leadership roles both within and outside the government realized that American women were indeed capable of contributing substantially to the war effort, even they accepted the prevailing stereotypes which portrayed women as best suited for tasks which demanded precision, repetition, and attention to detail. These factors, coupled with the post-Depression fear that women in uniform might take jobs from civilians, limited the initial range of employment for the first wave of women in, for example, the Army.

Traditional restrictions on female employment in American society were broken during World War II by the critical labor shortage faced by all sectors of the economy. As “Rosie the Riveter” demonstrated her capabilities in previously male-dominated civilian industries, women in the military broke the stereotypes which restricted them, moving into positions well outside of traditional roles.

Overcoming slander and conservative reaction by many Americans, a phenomenon shared by their British and Canadian sisters in uniform, American women persisted in their service and significantly contributed to the war effort. The 1943 transition from auxiliary status to the Women’s Army Corps (WAC) in the Army was de facto recognition of their valuable service.

In 1946, the Army asked Congress for the authority to establish the WAC as a permanent part of the Regular Army. This is the greatest single indication of the success of the wartime WAC and the Army acknowledged a need for the skills society believed women could provide. Although the bill was delayed in Congress for two years by political conservatives, it finally became law on 12 June 1948. With the passage of this bill, the Women’s Army Corps became a separate corps of the Regular Army. It remained part of the U.S. Army organization until 1978, when its existence as a separate corps was abolished and women were fully assimilated into all but the combat branches of the Army.

By 2009, a much larger number of positions in traditional sea, air and ground military units were opened to women, all with recent demonstrated success during combat operations in Iraq and Afghanistan. As can be seen, a great deal of progress has been made in the military from the early 1940’s onward until today. *(Source: Army Center for Military History)*

Pat Hickerson



The first example is someone who is actually not an engineer, but has a key engineering position. Patricia (Pat) Hickerson was named CH2M HILL's Army Strategic Account Manager in 2004 and as such is the company's primary point of contact with the Army . . . clearly an important and prestigious position.

Her success story begins with graduation from Martinsville, Virginia High School in 1960. While there she played flute in the school's band, and that interest led her to attend Converse College in Spartanburg, South Carolina.

She obtained a Bachelor of Music Degree with Honors in Flute Performance in 1964 followed by a Master of Music Degree from Converse in 1966, seemingly on her way to a life-long career in the music profession. However, after three years of teaching school, she diverted to join the Army instead, planning to stay five years and then seek a job in the civilian sector.

In 1968, she received a direct commission as a First Lieutenant in the Women's Army Corps (WAC) and immediately attended the WAC Officers Basic Course. This was during a time when Army women were all assigned to the Women's Army Corps (WAC) with most being given administrative, support and health care type occupational assignments (many job fields were restricted by law and/or policy).

In 1972 when the draft was disestablished, the WAC Advance Course she was getting ready to attend was canceled, as the Army began implementation of an all-volunteer force which included expanding the role of women. With the encouragement of the Infantry commander where she was stationed, she requested and was approved to attend the Infantry Officers Advance Course at Fort Benning, Georgia starting January

1973. Ultimately, Pat and another WAC Captain classmate would be the first and last women ever to attend this course; but, after their graduation the Commandant of the Infantry School validated to the Department of the Army the success of their training and recommended WAC Captains continue to attend. However, none did.

Her almost 33-year career with the military continued to be unique. In 1975, she was the first female officer on the staff at the U.S. Military Academy at West Point, being assigned as a Captain to the position of Admissions Officer. In that capacity she was involved in the admission of the first two classes of women to enter and later graduate from West Point. Additionally, in 1984 she was the first woman to command a battalion in VII Corps in Germany. As a sign of progress, in 1991 she was the second woman officer assigned as the Adjutant General of the Army.

Before she retired as a Major General in 2001, she had paved the way in many capacities for other women, as the Army opened up more and more occupational specialties to them, all the while assuring that those qualified were afforded an opportunity to demonstrate performance in key positions of increasing responsibility. The day she retired, she was the senior woman officer on active duty.

As a "flute playing, music major, Army officer", it's not immediately obvious how she ever became involved with engineering in the first place. She answered by saying her senior level Army assignments, being in charge of Army installations at two major commands, with a myriad of support functions, including public works and MILCON budgets, brought her in close contact with the Army Corps of Engineers and other organizations involved with base support. That afforded her the creden-

tials being sought by CH2M HILL when the company hired her in 2001, immediately following her departure from active duty (finally finding that civilian job).

Her first position with CH2M HILL was as Vice President for Human Development and Communications, in the firm's Hanford Group, located in Richland, Washington. As above, success in that job eventually led to her present role as the firm's Army Strategic Account Manager.

Given that the Army and CH2M HILL share similar values-based tenets of organization and management, her transition to the corporate world was relatively smooth. In addition to leadership, what helped her during that transition were lessons she'd learned before. Lessons such as: honesty, integrity and accountability; doing what one believes is right; remembering that people are any organization's most important asset; being ready to step up and try to do something different; and keeping in mind there is nothing wrong with taking a risk from time to time.

Along her way in the military she was mentored by others, none having more of a positive impact on her than the example of BG (Ret) Pat Foote, another pioneer in the Army and one of the Army's first female Military Police General Officers.

General Foote, whose career started in 1959, was one of a handful of WAC officers to serve in Vietnam where she experienced the TET Offensive armed only with her "M16 purse". She was the first woman appointed to the Army War College faculty and the first to command a brigade in Europe (at the same time LTC Hickerson commanded her battalion in Europe).

Setting the example as a strong leader of moral courage, General Foote mentored and advocated for women both individually and collectively, as the Army transitioned from a separate Women's Army Corps to a co-ed all volunteer force. General Foote processed Ms Hickerson's application to join the army in 1968 and was a mentor and friend during Hickerson's entire military career.

Today, both Hickerson and Foote appreciate how far women have come since they were on active duty, and applaud the extraordinary performance of women soldiers in Operations Enduring Freedom and Iraqi Freedom. One of the advances they are most proud of is the Army's recent promotion of the first four-star female general, of any military service, of any nation. The same might also be said in relation to how far women have come today in the civilian business world.

Andrea Nicolelli

Andrea Nicolelli is a Contract Administrator and Supplier Diversity Specialist with CH2M HILL's Denver, Colorado office. She was born in Allentown, PA, the African American daughter of a man working with IBM. She was provided with an impressionable example daily by her father's work ethic and determination to succeed regardless of challenges he faced along the way.

Her father was one of the few African Americans working for IBM at the time, and while he was well compensated financially, the family often struggled to do everything they might have wanted to do. With her father traveling often for IBM, her mother kept the family united and impressed upon her daughter that even with present circumstances, it was most important to keep things in proper perspective, and to maintain a balance between what a person might be compelled to do by circumstances, versus what one needed to do from a personal standpoint. These were words of advice which she would remember years later.

Following graduation from high school in 1983, she was encouraged by her mother to attend Virginia State University in Petersburg, Virginia, majoring in Public Administration. After a time, she decided that college was not right for her then, so she elected to enlist in the U.S. Air Force, as a Security Police Officer. Jumping ahead by approximately 25 years, she eventually obtained a Bachelor's Degree in Organizational Development from Regis University in Denver, Colorado. Her route to that degree is an example of what can be accomplished given the determination to succeed.

While in the Air Force she worked in the military's prison system, and was assigned as the only woman at the maximum security complex at Lowery AFB, Colorado. For reasons

she does not fully understand, she was selected to attend (as the first Air Force woman) the U.S. Marine Corps Correctional Officers Course . . . a 3-month long, rigorous, totally male-dominated environment. Her graduation from that course was held in high regard by peers and superiors alike.

She married (and later divorced) another Air Force service member, and they were assigned to Kirtland AFB in New Mexico. After her service obligation was over, she found employment there performing administrative work for a local law/bar foundation firm. Afterwards, they were reassigned to Edwards AFB, California where she worked for a healthcare firm. That professional experience, along with that gained in New Mexico, taught her many basic skills of negotiation, contract management, human relations, and the need to pay attention to detail. It also taught her the need to "maintain a balance" between work and family life as had been stressed by her mother years before.

After she and her husband separated, her instincts called her "back home" to New York to be with family. Traveling by car across the country from California in 1994, she stopped in Denver, Colorado to visit a close friend . . . to relax for a time and "be a ski bum." In her words, "Denver and Colorado are so great, I never left!"

Deciding to remain in Denver, she found a job within the telecom and cable industry and worked in that capacity for around ten years, all the while demonstrating an ability to persevere and excel under challenging circumstances, some related to her gender and the fact that much of what she was doing had always been male-oriented.

In 2005, she was referred to CH2M HILL's Denver area offices as being an outstanding candidate for possible employment with the firm. She was hired at that time for her present

position as a Contract Administrator and Supplier Diversity Specialist.

She said during her professional and family life that she had numerous opportunities to counsel and mentor younger men and women, always advising them to consider what is really important in life, and to downplay youthful temptations of instant gratification offered by material things. She advised those with whom she spoke to live their own lives, to be brave and true to themselves. And, like her family had done with her, she counseled peers and others in the workplace the importance of "maintaining balance" between a professional and personal life.

In her case, "balance" means finding time after work, while advancing upward professionally, to get outdoors and go hiking or fishing, to attend sporting events locally (she is a Rockies and Broncos fan), to be involved in the local music and cultural scene, and to generally "relax and have fun."

Other principles to which she subscribes are to: work hard to set an example of what can be accomplished, treat all with respect since that earns respect in return, and to admit mistakes when they occur and then move on. In that regard,

she said, "Every day I understand I may encounter numerous opportunities to fall on my face."

When asked if she had encountered instances during her professional life where she was discriminated against based on her gender, she replied not that many times. However, she countered by saying that in her view those in charge of some of the companies she'd earlier worked with (male or female), tended to sometimes hold back subordinates because they were intimidated by what they saw in terms of outstanding job performance from below, and how that might affect them personally and professionally.

Andrea Nicolelli is, in sum, a well-balanced professional with a realistic grasp on life in general. She is one who has demonstrated time and again an ability to achieve difficult goals set before her. What lies ahead for her professionally might be described as being "both exciting and rewarding." However, she prefers not to look too far out in the future because, "Doing what I do now with CH2M HILL has been truly awesome, I could not ask for more."



Kyra Donnell

Working from the Knoxville, TN office of CH2M HILL, Kyra Donnell is a Senior Engineer and Project Manager, and is the Market Segment Lead for Munitions Response in CH2M HILL's southeastern region of the U.S. In that capacity she works exclusively with Department of Defense clients . . . primarily Army and Marine Corps installations. Her job involves handling environmental concerns of the military, including munitions response, active range clearance and assessment, and munitions constituents monitoring and remediation.

An "Army brat," her father served for twenty-two years in the Infantry, and while stationed as a young Soldier in Berlin, married her Czech-born German mother. As such, she learned early in life a traditional "German work ethic" coupled with the military values and ethics beliefs of her Infantryman father. She said, "From my mother's side I remember a sign that always hung over our kitchen door that read 'Without Work—No Cake.'" She then added, "My father passed on to me and my two brothers, strong leadership qualities and a 'You can't smoke me' attitude."

Another aspect during her formative years which she recalls as having helped her later in life, was that her parents believed if you wanted something personal for yourself, such as the type items most young people want—clothing, electronics, cars and so forth—you had to either pay for all of it, or a part of it. Nothing was to be given without some financial commitment on the part of the receiver. Thus, she had to work to earn spending money, and more importantly had to work to help pay for her first two years in college.

In 1980 when her father retired from the Army, the family moved to Tennessee. She attended the University of Tennessee (UT) in Knoxville beginning in 1985, majoring in civil engineer-

ing with an environmental option. Weary of waitressing and working at the deli counter, one day during her second year at UT she casually walked into the Army ROTC office and inquired about a possible scholarship. Following her attendance at ROTC Basic Camp at Fort Knox, Kentucky she was given a two-year ROTC academic scholarship.

Because of her outstanding demonstrated performance at ROTC Advance Camp at Fort Lewis between her junior and senior year, she was promoted to the rank of Cadet Lieutenant Colonel, and assigned as UT's Volunteer Battalion Commander. Her future husband and college sweetheart was assigned with similar rank as the Ranger Battalion Commander. She recalled, "Many said that was the only time the two battalions got along!"

Following graduation in 1987, she was commissioned into the Medical Service Corps (MSC). Some may wonder why a civil engineer graduate did not choose to enter the Corps of Engineers. In her case she had worked with preventative medicine (sanitation) personnel at Fort Knox while in ROTC, and had participated in many missions (as a cadet) in that regard. That experience, plus her primary interest in the environmental versus civil side of engineering, led her to select the MSC in order to be able to serve as a Sanitary Engineer.

Her husband was commissioned into the Ordnance Corps and their first duty assignment was at Edgewood, MD. She worked with the Army's Environmental Hygiene Agency (now known as the Center for Health and Preventive Medicine). A later assignment in Germany with the Army's 10th Medical Laboratory at Landstuhl gave her increased experience in providing preventative medicine support.

Her son Travis had been born in Maryland, and her daughter Taylor was born while the family was stationed in Germany. Just two weeks following the birth of their daughter, her hus-

band was tragically killed in an automobile accident, and she then left Germany to return to Tennessee.

After she departed active duty in 1993, she served in the active Reserve then Inactive Ready Reserve and began her civilian career working a combined total of ten years with Radian Corporation in Oak Ridge, TN, later to merge with URS Corporation. In July 2005 she was hired by CH2M HILL.

Her period of military service during which she strengthened an already solid foundation of personal leadership and professional values, proved invaluable to her current career. She said, "The one thing that always stands out to me is the old Infantry adage: Mission First and People Always." She said that motto makes her remember how her actions and decisions might impact other people involved.

For example, she remembered a time when she had missed an important deadline . . . a submittal to a regulatory agency. She said she'd worked diligently, but did not reach out to others in time to get the assistance she required. Rather than speak up and request an extension to the deadline, she just "dug in deeper" and finally had to admit it just was not going to get done. She said, "I learned the importance of personal communication—early and often!"



Her job successes clearly identified her as one of the industry's best. Her ability to communicate complicated issues in simple terms has proven very successful as she works daily with clients in the military . . . people with whom she shares similar values and experiences.

To younger women, and especially those at a point in life where career decisions are being made, Kyra Donnell points to the many positive aspects of the job she now enjoys: being able to work flexibly often out of her home, being able to work with a wide range of customers she can relate to (and vice versa), being able to experience the personal satisfaction that goes along with doing a job right and seeing the results, and being offered opportunities to expand into new business markets within the Southeastern U.S.

When asked about what lies ahead for her, she responded, "My daughter turns 16 next month and is actively looking at college and career fields of her own, so I don't want to do anything 'crazy'. Later on, I'd perhaps be interested in working overseas if such opportunities were made available to me. I thrive on 'new and interesting' so I'll just have to keep my eye out for things in that regard."

Melanie Barber

An Associate Engineer with CH2M HILL's office in Henderson, Nevada, Melanie Barber works in traditional engineering functional areas such as design and project management, and is involved in business development with the company; throughout Northern California, Nevada, Utah, and within the overall Army Corps of Engineers South Pacific Division's geographic areas of responsibility. She graduated from the United States Military Academy at West Point in 2002 with a degree in Civil Engineering. She later earned a Masters of Business Administration with a focus in Technology Management from the University of Phoenix. Commissioned in the Army Corps of Engineers upon graduation from West Point, she was first assigned to Fort Bragg, NC where she served with the 20th Engineer Brigade.

Married to a West Point graduate (who entered the Air Force while she entered the Army) the military sent them together west to New Mexico where she served with the USACE engineer district in Albuquerque, while her husband was assigned to Kirtland AFB. She elected to leave active service in 2007 and was later hired by CH2M HILL. Her husband remains in the Air Force today, as a flight test engineer, and plans to make the service a career.

The daughter of a West Point graduate, and career Army Corps of Engineers officer, she was provided with numerous examples of leadership, commitment, integrity and loyalty throughout her formative years. While in high school, she developed an interest in engineering but at first had no intent of entering the military to follow the lead of her Army engineer father. As such, she became interested in attending the University of Notre Dame to major in civil engineering, but when an opportunity to attend West Point came along, she did not hesitate to accept.

When asked what advice she would give to young women graduating from high school today, in relation to job career

fields or academic areas of study, she said, "I'd say to do what you want to do, and not be guided into something by others that you may not be all that interested in."

In her case, civil engineering was what she was initially drawn toward and she was fortunate to be able to serve with the USACE district in Albuquerque in that regard as a Captain, and then continue to be able to work with the district as an engineer representative from industry after she left active service.

Like others, she had mentors along the way who helped guide and influence her development. Foremost was her father. **(photo right).**

One event which stood out in her memory was the opportunity to be able to complete her first parachute jump after being assigned to a troop unit, alongside her father who was at the time still on active duty at Fort Bragg, and who himself was a seasoned airborne Soldier. Another who helped guide and mentor her was the Albuquerque District Commander, Todd Wang, who also now works for CH2M HILL in its Denver office.

Women who were among the first to graduate from West Point also provided examples for her development, and that list included Donna White and Joan Gray. Each of these mentors provided her with encouragement and advice which later proved most helpful to her professional development as it now stands. Melanie also says she has been lucky to find many great mentors at CH2M HILL that have helped her to successfully transition from the military to the civilian world.

Like other women who work in typically male oriented, and sometimes dominated career fields, she found from time to time a need to have to expressly prove herself to those around her. She did that by working hard and paying attention to the need to listen first and communicate second.

For example, while assigned as a Captain in the USACE district where she worked, she was involved in a difficult project where there was a need to develop a good relationship with land owners within the project area. The relationships she

developed during that project later proved successful because as she said, "I demonstrated my engineering technical ability, while at the same time showing I could listen and appreciate the views of all parties involved."

She sees the way ahead for women in the engineering field as being bright, given that there have been so many outstanding women who helped pave the way for those much younger like herself. While she felt there will certainly be future challenges for women, and while there may not always be a proportionate share of top level engineering jobs being given to women in some companies, she believes that so long as there are firms such as CH2M HILL, many women will eventually advance to the top ranks throughout the engineering and construction industry.

As far as her future is concerned, she said, "I'm going to take it one assignment at a time." Given that it is the desire of her husband to remain on active duty in the Air Force and to pursue a career in that regard, there will always be a need for her to consider her profession in relation to his, and vice versa. However, given the number of widely dispersed area offices from which CH2M HILL operates, she believes there will always be opportunities for both her and her husband to develop within their respective career paths.



The brief stories of these four women are inspirational and may be instructional to others presently working or seeking to work within the engineering and construction industry. Each of these four has a distinctly different personal and professional background, but all four have together flourished within a working environment which strongly fosters independent thinking; exhibits a high level of corporate standards, values and ethics; and which makes available to women, opportunities that in other companies might not be possible. It is for just those reasons that a Catalyst Award for 2009 was given to CH2M HILL . . . a first within the engineering and construction field. **AE**